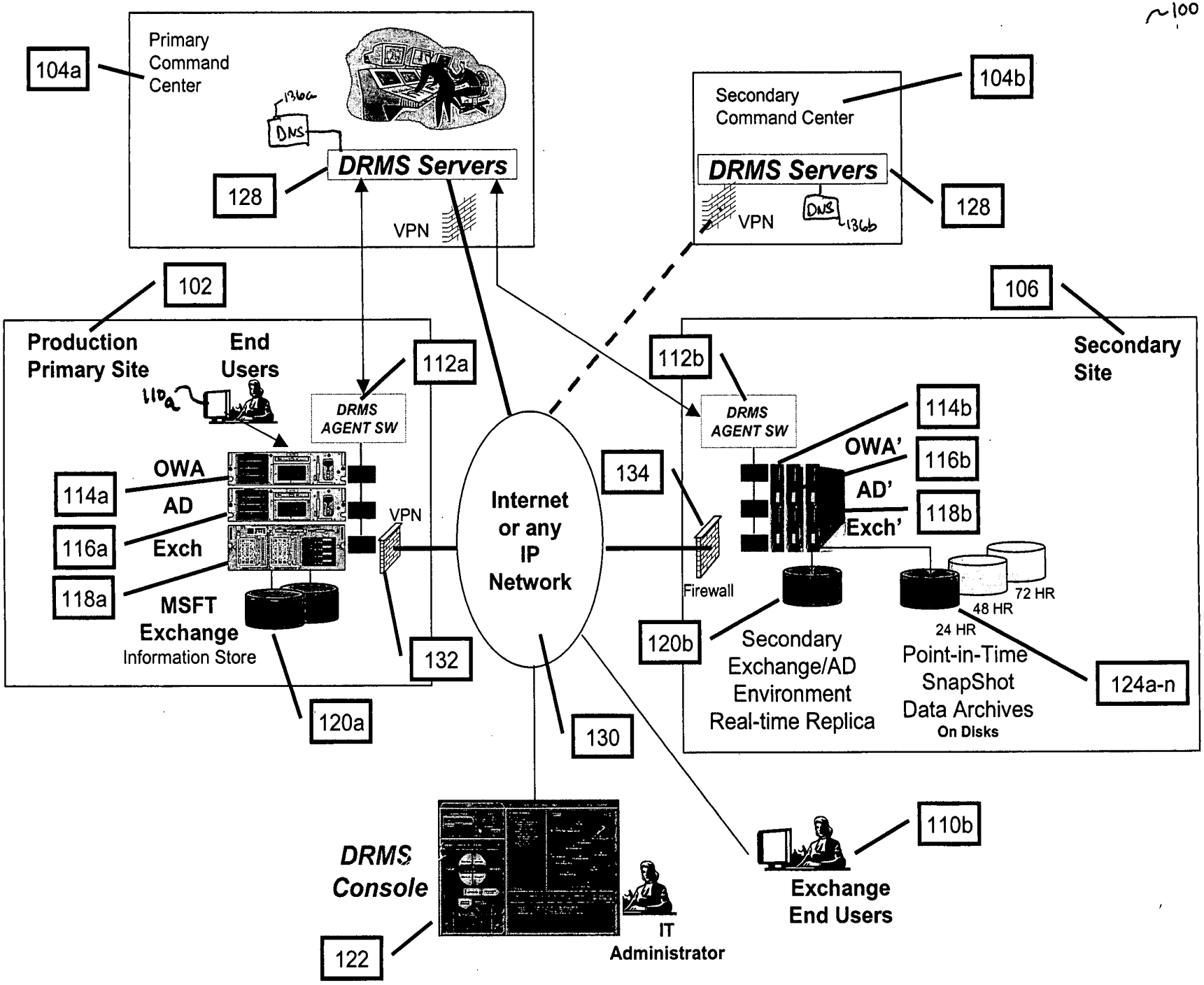

100
Primary Command Center
104a
DNS
136a
DRMS Servers
128
VPN
Secondary Command Center
104b
DRMS Servers
VPN
DNS
136b
128
102
106
Production Primary Site
End Users
110a
112a
DRMS AGENT SW
OWA
AD
Exch
MSFT Exchange Information Store
114a
116a
118a
VPN
132
120a
Internet or any IP Network
134
130
112b
DRMS AGENT SW
Secondary Site
114b
116b
118b
OWA'
AD'
Exch'
Firewall
120b
Secondary Exchange/AD Environment Real-time Replica
72 HR
48 HR
24 HR
Point-in-Time SnapShot Data Archives
On Disks
124a-n
DRMS Console
122
IT Administrator
110b
Exchange End Users

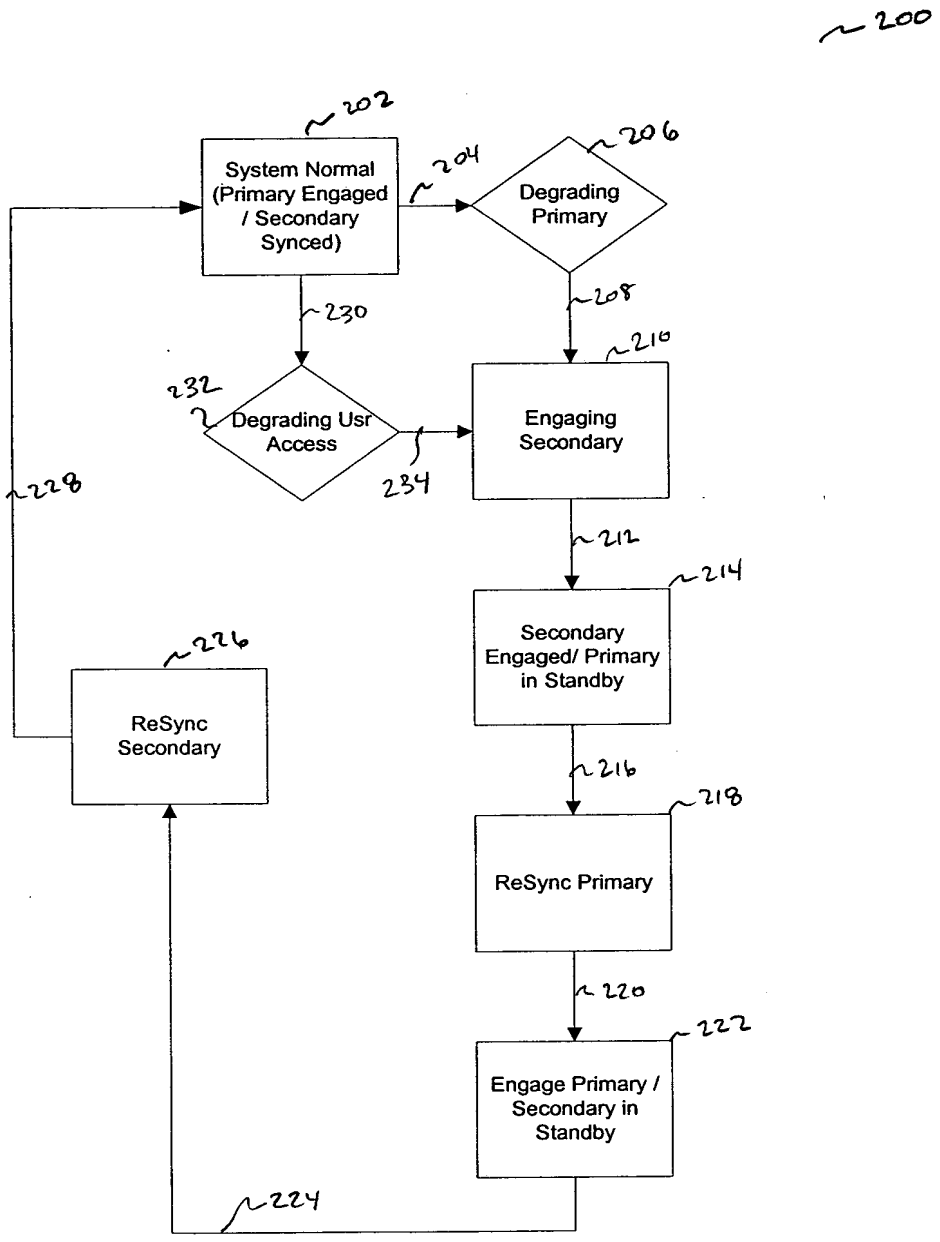

200
202
System Normal (Primary Engaged / Secondary Synced)
204
206
Degrading Primary
208
230
210
232
Degrading Usr Access
234
Engaging Secondary
228
212
214
Secondary Engaged/ Primary in Standby
226
ReSync Secondary
216
218
ReSync Primary
220
222
Engage Primary / Secondary in Standby
224

**FIGURE 2**

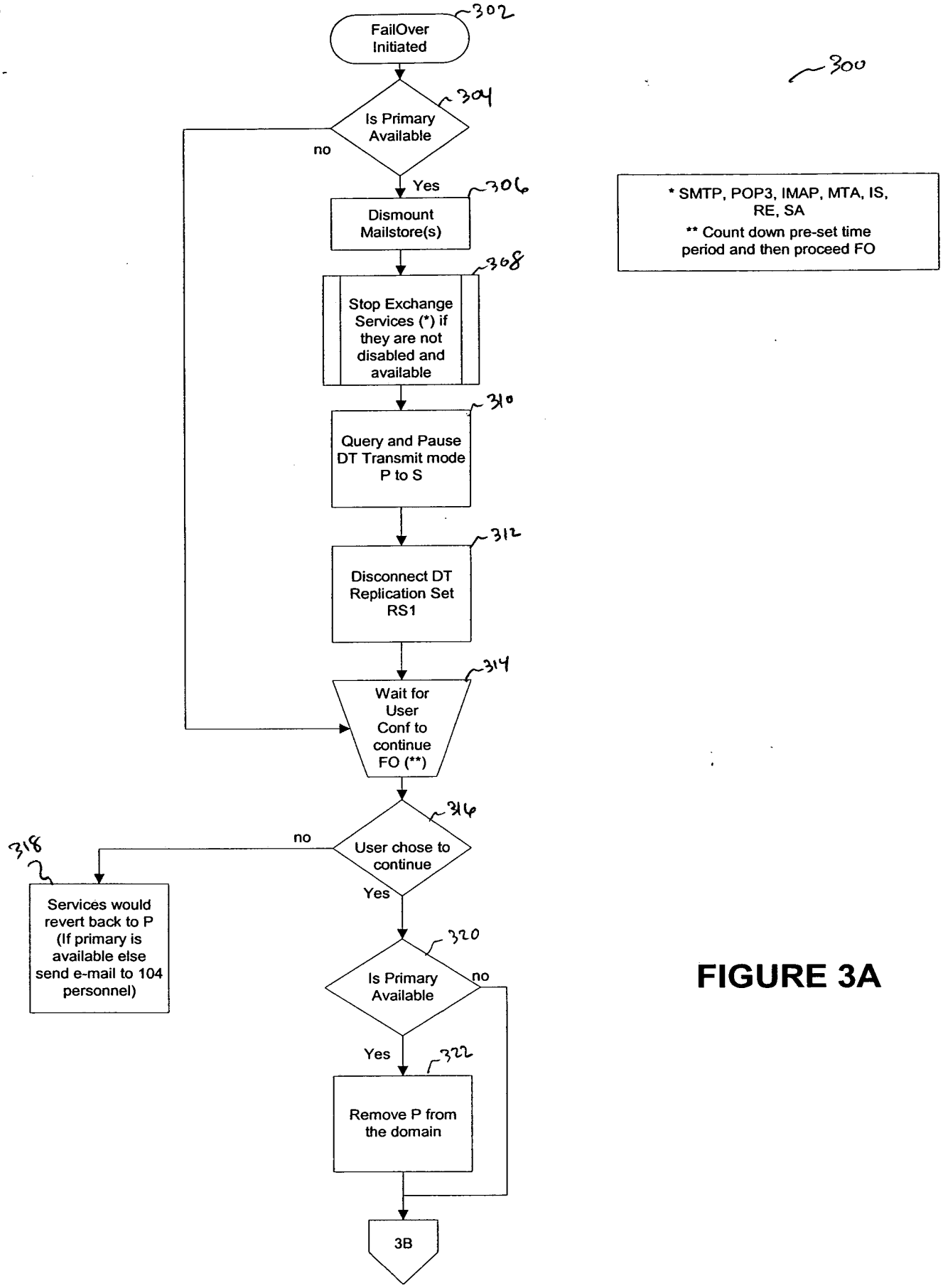
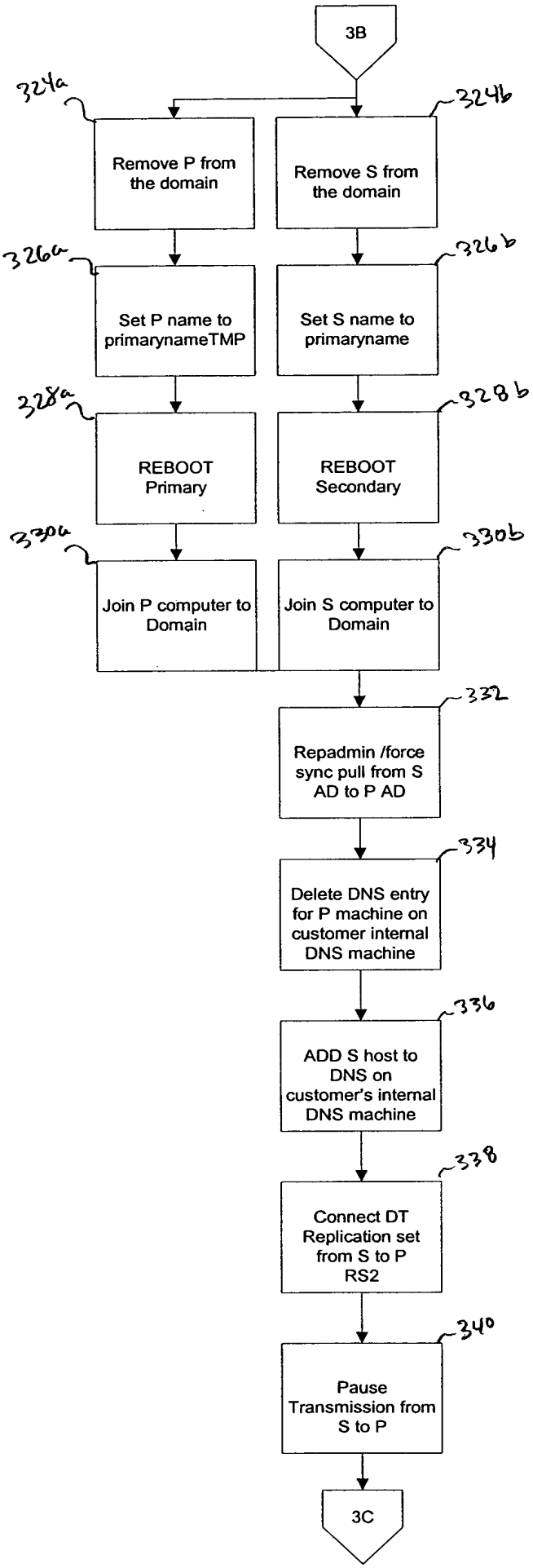

302
FailOver Initiated
304
Is Primary Available
no
Yes
306
Dismount Mailstore(s)
308
Stop Exchange Services (*) if they are not disabled and available
310
Query and Pause DT Transmit mode P to S
312
Disconnect DT Replication Set RS1
314
Wait for User Conf to continue FO (**)
316
User chose to continue
no
318
Services would revert back to P (If primary is available else send e-mail to 104 personnel)
Yes
320
Is Primary Available
no
Yes
322
Remove P from the domain
3B
300
* SMTP, POP3, IMAP, MTA, IS, RE, SA
** Count down pre-set time period and then proceed FO

FIGURE 3A




300

FIGURE 3B

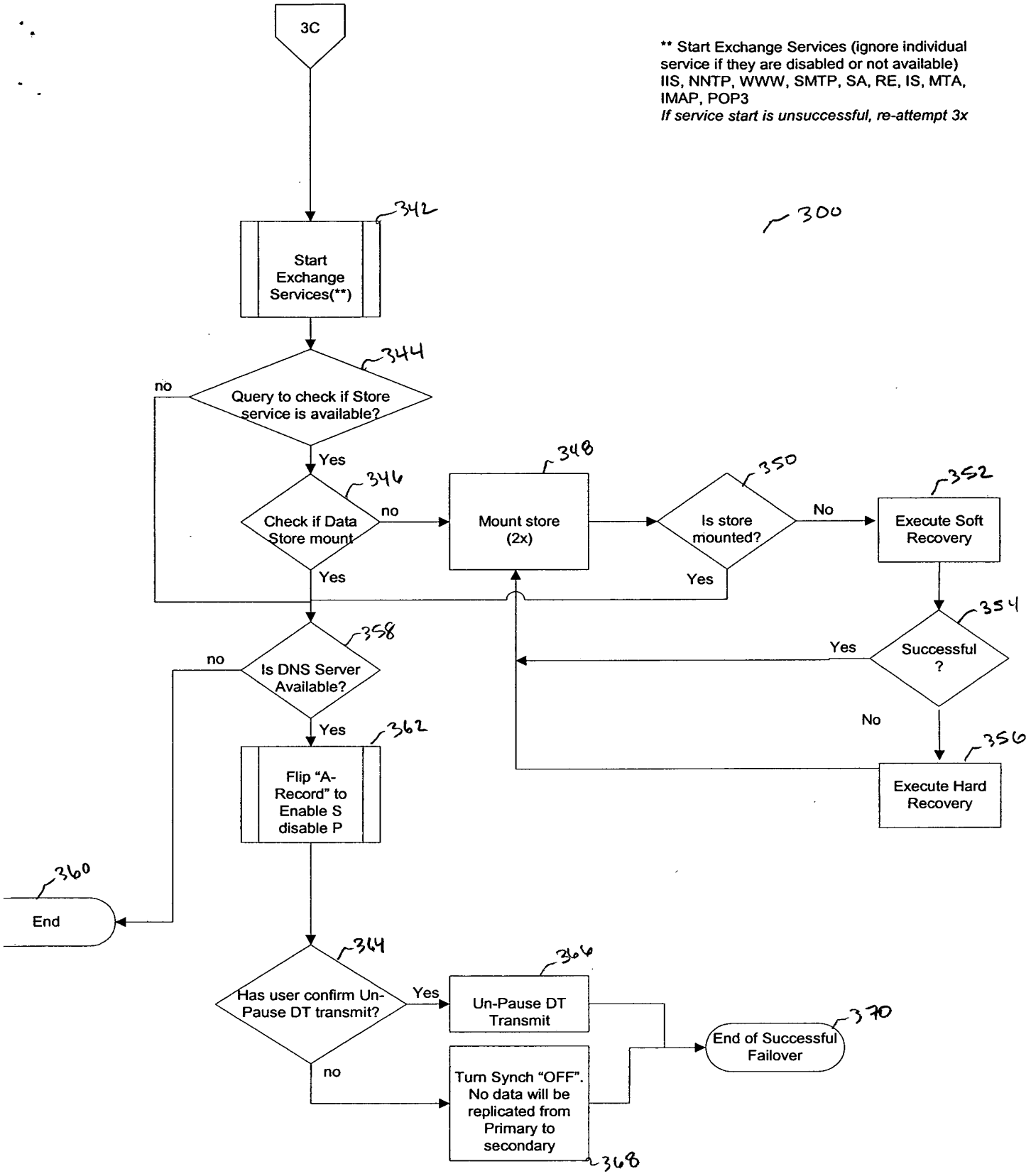

3C
** Start Exchange Services (ignore individual service if they are disabled or not available) IIS, NNTP, WWW, SMTP, SA, RE, IS, MTA, IMAP, POP3
*If service start is unsuccessful, re-attempt 3x*
300
342
Start Exchange Services(**)
344
Query to check if Store service is available?
no
Yes
346
Check if Data Store mount
no
Yes
348
Mount store (2x)
350
Is store mounted?
No
Yes
352
Execute Soft Recovery
354
Successful ?
Yes
No
356
Execute Hard Recovery
358
Is DNS Server Available?
no
Yes
360
End
362
Flip "A-Record" to Enable S disable P
364
Has user confirm Un-Pause DT transmit?
Yes
no
366
Un-Pause DT Transmit
Turn Synch "OFF". No data will be replicated from Primary to secondary
368
370
End of Successful Failover

**FIGURE 3C**

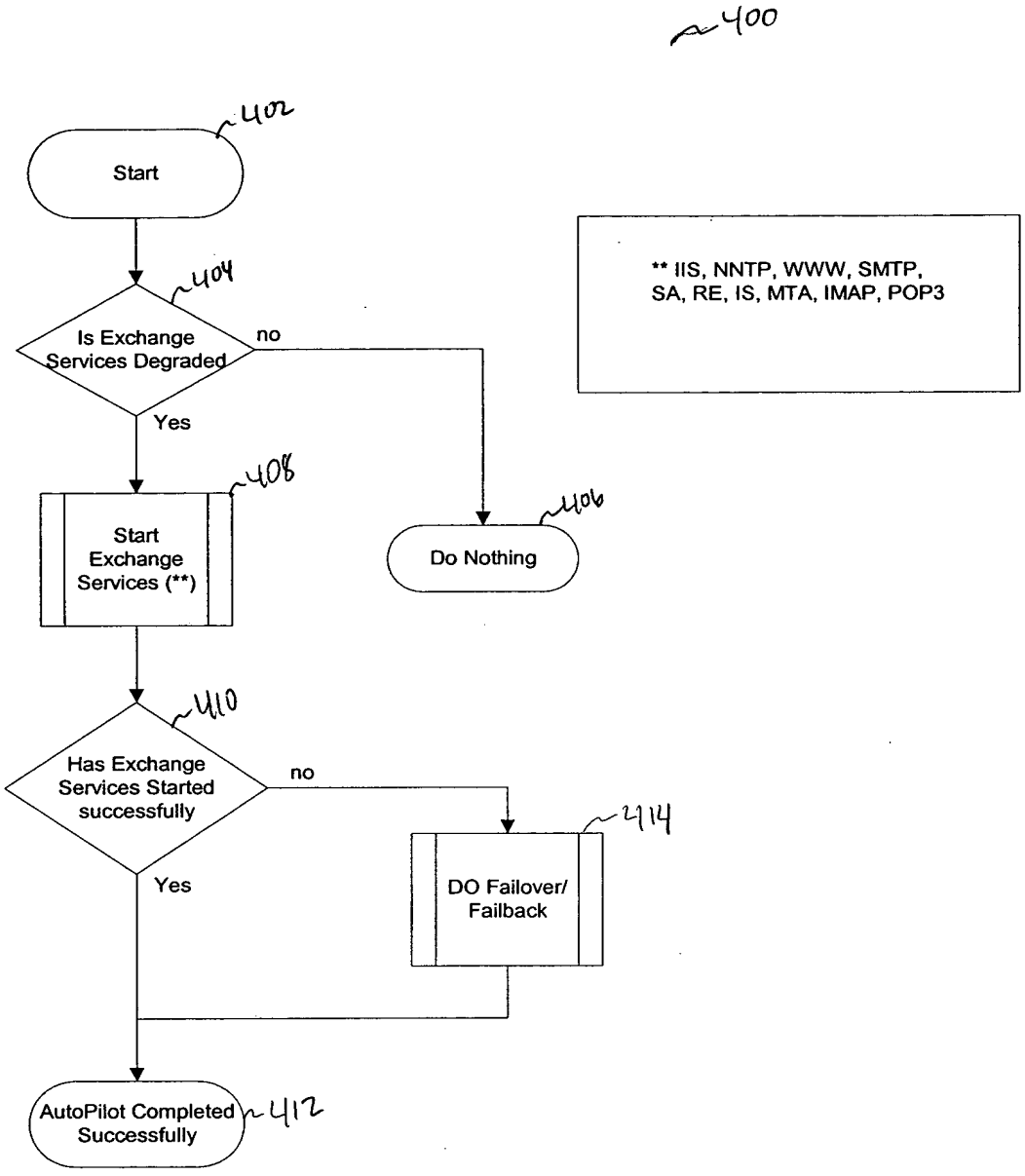

400
402
Start
404
Is Exchange Services Degraded
no
Yes
406
Do Nothing
408
Start Exchange Services (**)
410
Has Exchange Services Started successfully
no
Yes
414
DO Failover/ Failback
412
AutoPilot Completed Successfully
** IIS, NNTP, WWW, SMTP, SA, RE, IS, MTA, IMAP, POP3

**FIGURE 4**

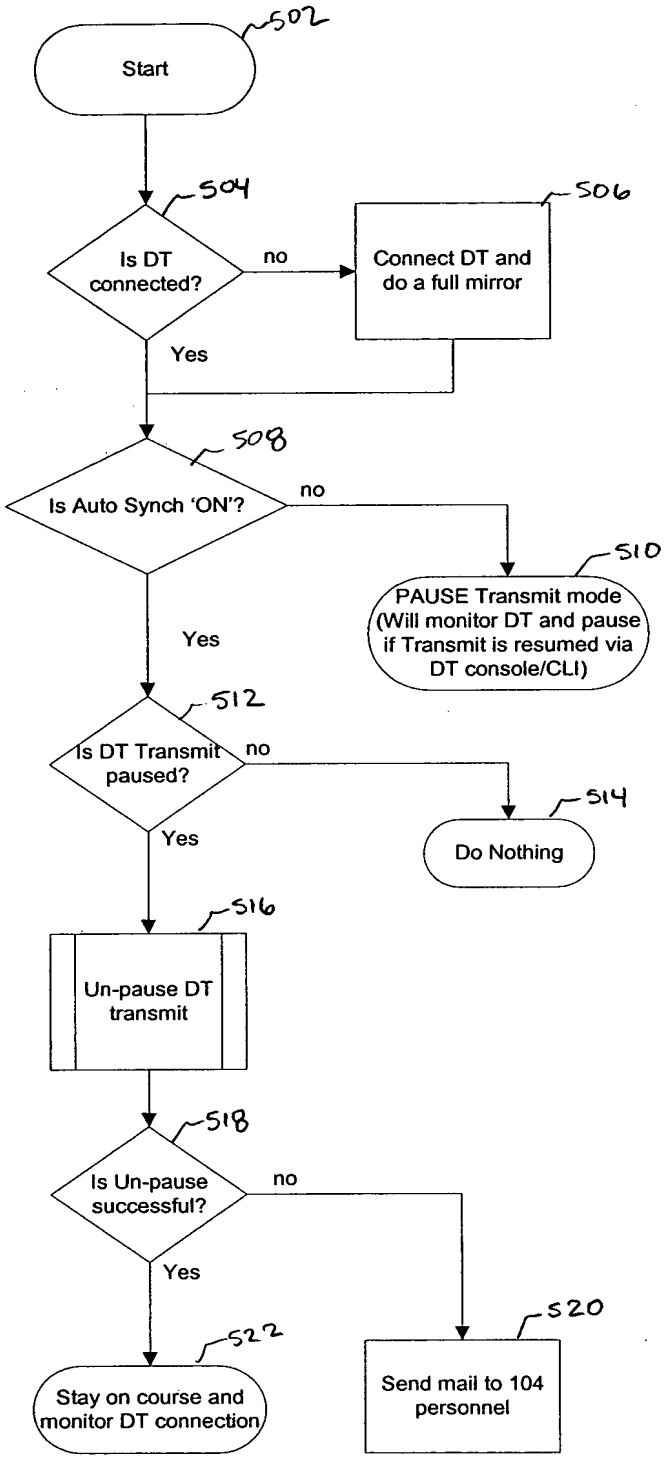
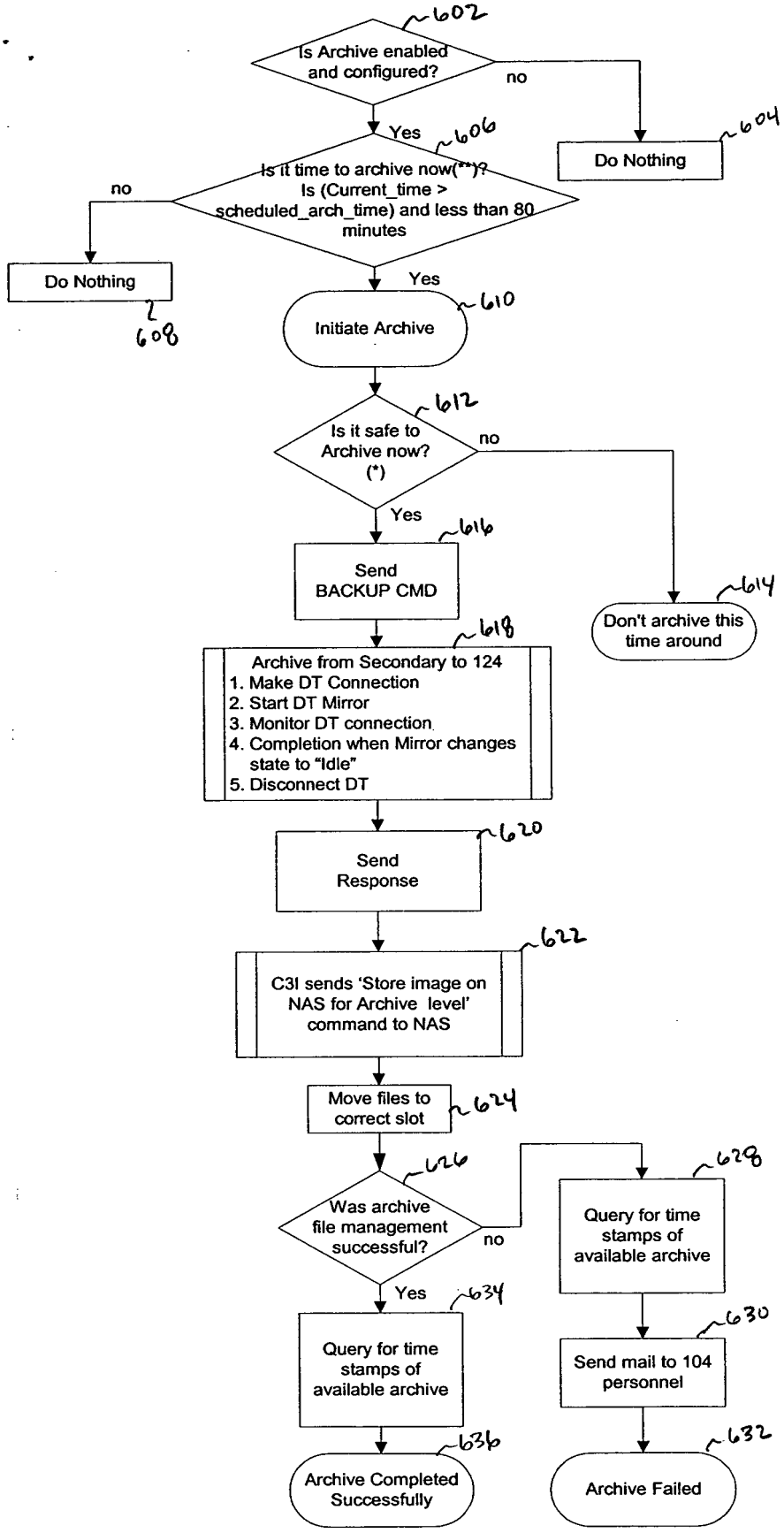

500
502
Start
504
Is DT connected?
no
506
Connect DT and do a full mirror
Yes
508
Is Auto Synch 'ON'?
no
510
PAUSE Transmit mode (Will monitor DT and pause if Transmit is resumed via DT console/CLI)
Yes
512
Is DT Transmit paused?
no
514
Do Nothing
Yes
516
Un-pause DT transmit
518
Is Un-pause successful?
no
520
Send mail to 104 personnel
Yes
522
Stay on course and monitor DT connection

FIGURE 5




* It is not safe to archive when
- Failing over
- Failing back
- Archive is in progress
- Restore is in progress

** At start up, system 100 loads the time stamp of all recent images from DB
- 0 (if none)
- UTC timestamp for most recent successful archival existing customer for all levels

**FIGURE 6**

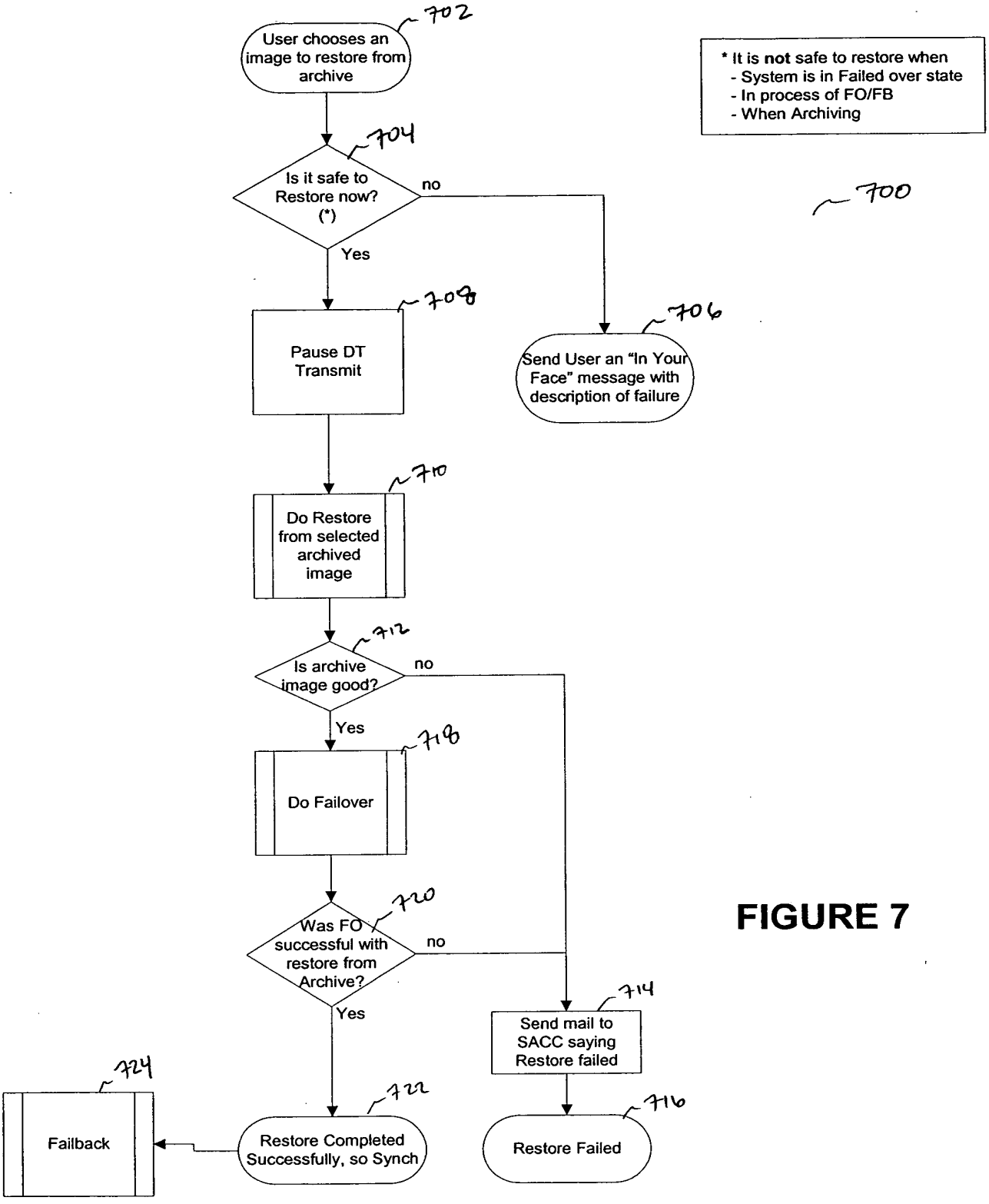

User chooses an image to restore from archive
702
Is it safe to Restore now? (*)
704
no
Yes
Pause DT Transmit
708
Send User an "In Your Face" message with description of failure
706
Do Restore from selected archived image
710
Is archive image good?
712
no
Yes
Do Failover
718
Was FO successful with restore from Archive?
720
no
Yes
Send mail to SACC saying Restore failed
714
Restore Failed
716
Restore Completed Successfully, so Synch
722
Failback
724
* It is not safe to restore when
- System is in Failed over state
- In process of FO/FB
- When Archiving
700

FIGURE 7

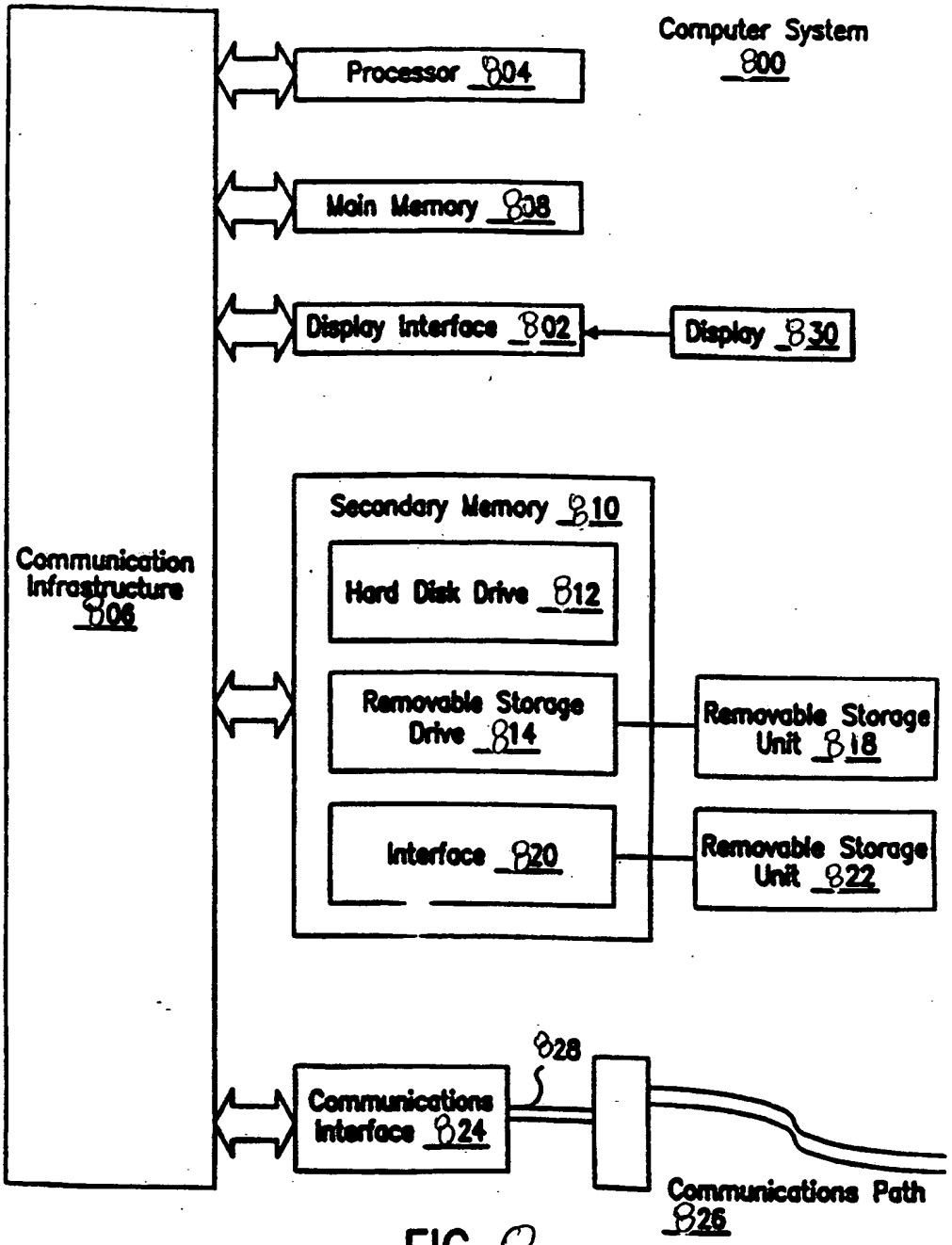
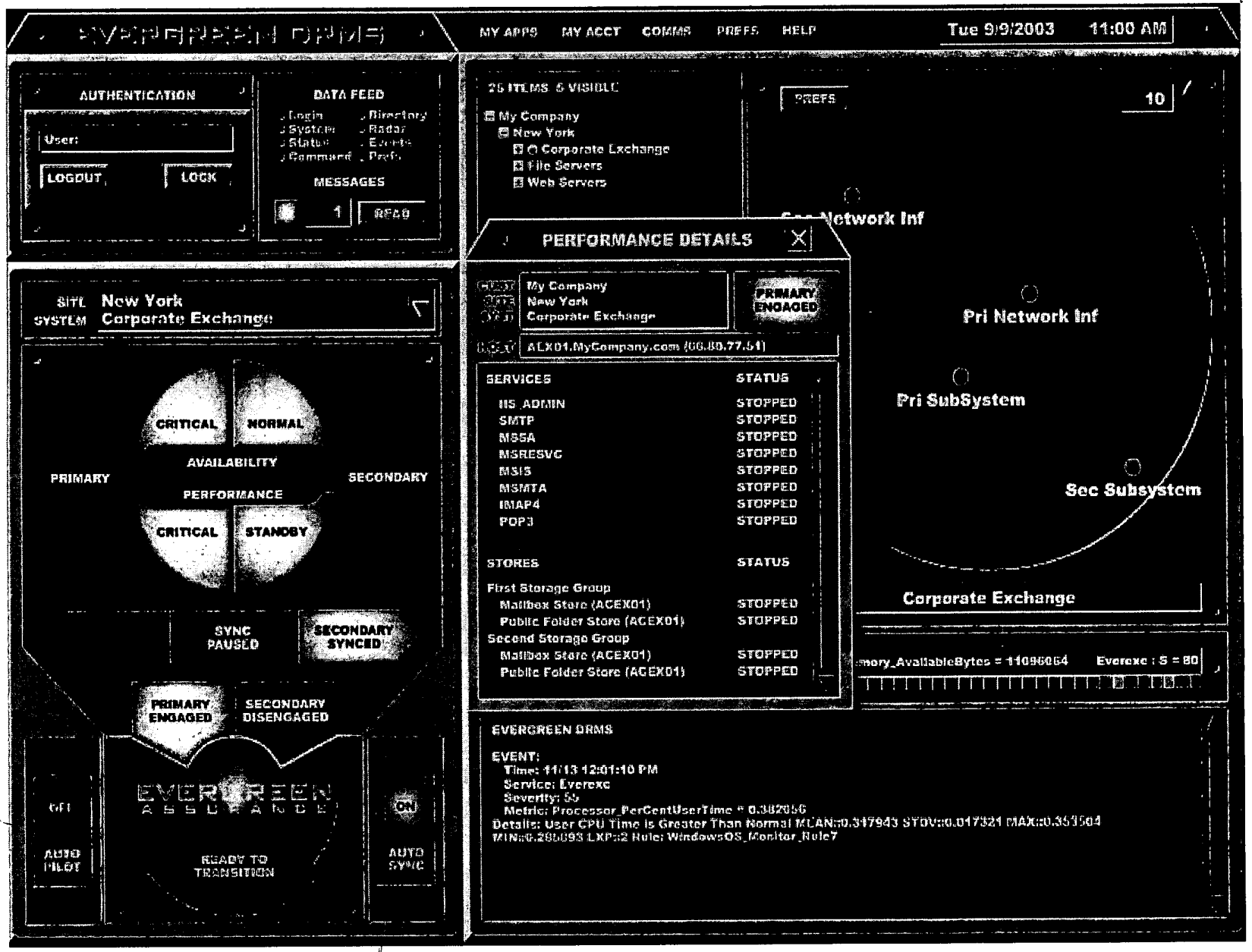

Computer System
800
Processor 804
Main Memory 808
Display Interface 802
Display 830
Secondary Memory 810
Hard Disk Drive 812
Removable Storage Drive 814
Removable Storage Unit 818
Interface 820
Removable Storage Unit 822
Communication Infrastructure 806
828
Communications Interface 824
Communications Path 826

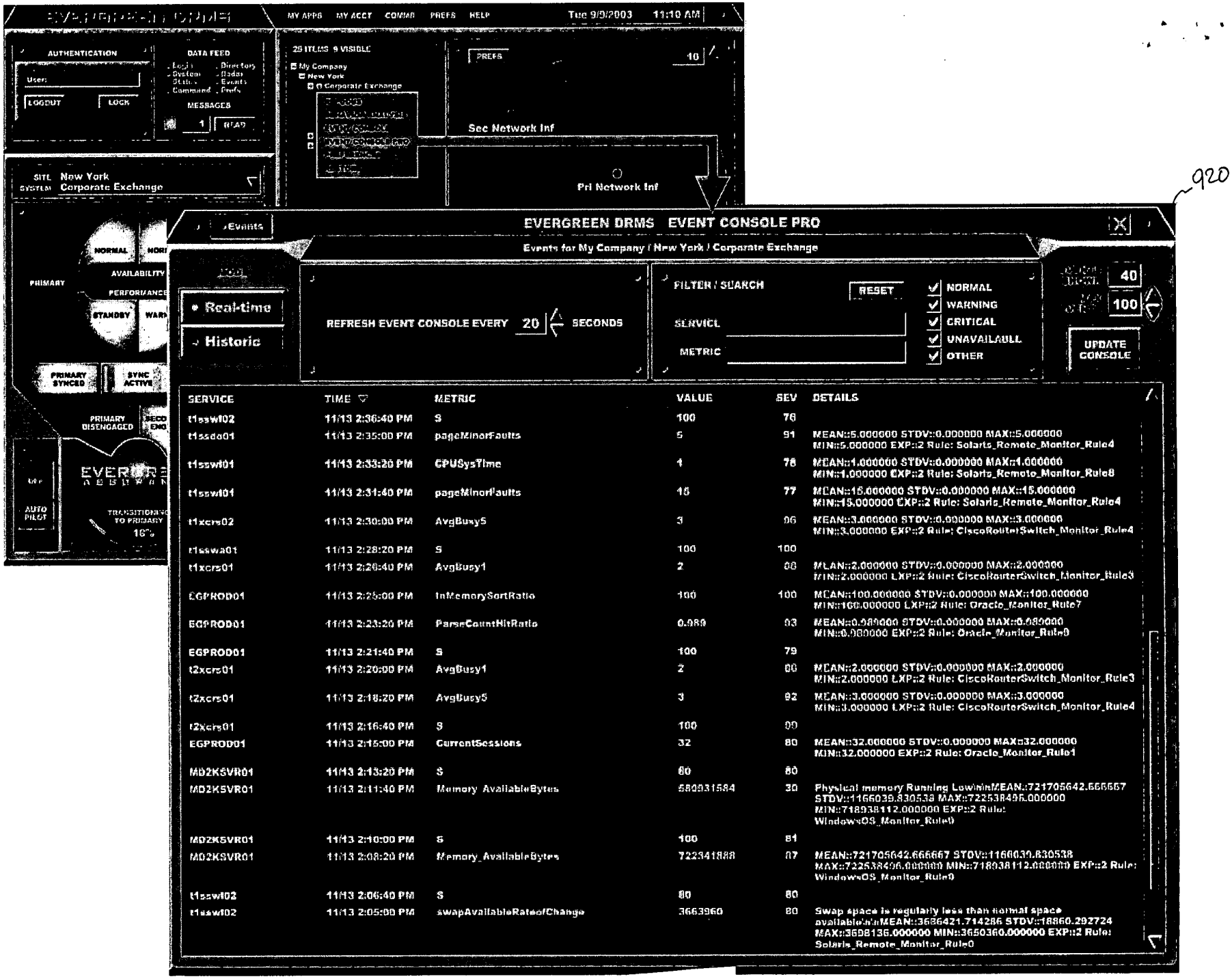
FIG. 8




912

914

FIG. 9A




| SERVICE | TIME | METRIC | VALUE | SEV | DETAILS |
|---|---|---|---|---|---|
| t1sswt02 | 11/13 2:36:40 PM | S | 100 | 76 | |
| t1ssda01 | 11/13 2:35:00 PM | pageMinorFaults | 5 | 91 | MEAN::5.000000 STDV::0.000000 MAX::5.000000 MIN::5.000000 EXP::2 Rule: Solaris_Remote_Monitor_Rule4 |
| t1sswt01 | 11/13 2:33:20 PM | CPUSysTime | 1 | 78 | MEAN::1.000000 STDV::0.000000 MAX::1.000000 MIN::1.000000 EXP::2 Rule: Solaris_Remote_Monitor_Rule8 |
| t1sswt01 | 11/13 2:31:40 PM | pageMinorFaults | 15 | 77 | MEAN::15.000000 STDV::0.000000 MAX::15.000000 MIN::15.000000 EXP::2 Rule: Solaris_Remote_Monitor_Rule4 |
| t1xcrs02 | 11/13 2:30:00 PM | AvgBusy5 | 3 | 96 | MEAN::3.000000 STDV::0.000000 MAX::3.000000 MIN::3.000000 EXP::2 Rule: CiscoRouterSwitch_Monitor_Rule4 |
| t1sswa01 | 11/13 2:28:20 PM | S | 100 | 100 | |
| t1xcrs01 | 11/13 2:26:40 PM | AvgBusy1 | 2 | 98 | MEAN::2.000000 STDV::0.000000 MAX::2.000000 MIN::2.000000 EXP::2 Rule: CiscoRouterSwitch_Monitor_Rule3 |
| EGPROD01 | 11/13 2:25:00 PM | InMemorySortRatio | 100 | 100 | MEAN::100.000000 STDV::0.000000 MAX::100.000000 MIN::100.000000 EXP::2 Rule: Oracle_Monitor_Rule7 |
| EGPROD01 | 11/13 2:23:20 PM | ParseCountHitRatio | 0.980 | 93 | MEAN::0.980000 STDV::0.000000 MAX::0.980000 MIN::0.980000 EXP::2 Rule: Oracle_Monitor_Rule0 |
| EGPROD01 | 11/13 2:21:40 PM | S | 100 | 79 | |
| t2xcrs01 | 11/13 2:20:00 PM | AvgBusy1 | 2 | 98 | MEAN::2.000000 STDV::0.000000 MAX::2.000000 MIN::2.000000 EXP::2 Rule: CiscoRouterSwitch_Monitor_Rule3 |
| t2xcrs01 | 11/13 2:18:20 PM | AvgBusy5 | 3 | 92 | MEAN::3.000000 STDV::0.000000 MAX::3.000000 MIN::3.000000 EXP::2 Rule: CiscoRouterSwitch_Monitor_Rule4 |
| t2xcrs01 | 11/13 2:16:40 PM | S | 100 | 00 | |
| EGPROD01 | 11/13 2:15:00 PM | CurrentSessions | 32 | 80 | MEAN::32.000000 STDV::0.000000 MAX::32.000000 MIN::32.000000 EXP::2 Rule: Oracle_Monitor_Rule1 |
| MD2KSVR01 | 11/13 2:13:20 PM | S | 80 | 80 | |
| MD2KSVR01 | 11/13 2:11:40 PM | Memory_AvailableBytes | 580931584 | 30 | Physical memory Running LowMinMEAN::721705642.666667 STDV::1166039.830538 MAX::722538496.000000 MIN::718938112.000000 EXP::2 Rule: WindowsOS_Monitor_Rule0 |
| MD2KSVR01 | 11/13 2:10:00 PM | S | 100 | 81 | |
| MD2KSVR01 | 11/13 2:08:20 PM | Memory_AvailableBytes | 722341888 | 07 | MEAN::721705642.666667 STDV::1166039.830538 MAX::722538496.000000 MIN::718938112.000000 EXP::2 Rule: WindowsOS_Monitor_Rule0 |
| t1sswt02 | 11/13 2:06:40 PM | S | 80 | 80 | |
| t1sswt02 | 11/13 2:05:00 PM | swapAvailableRateofChange | 3663960 | 80 | Swap space is regularly less than normal space available\n\nMEAN::3686421.714286 STDV::18860.292724 MAX::3698136.000000 MIN::3650360.000000 EXP::2 Rule: Solaris_Remote_Monitor_Rule0 |

FIG. 9B

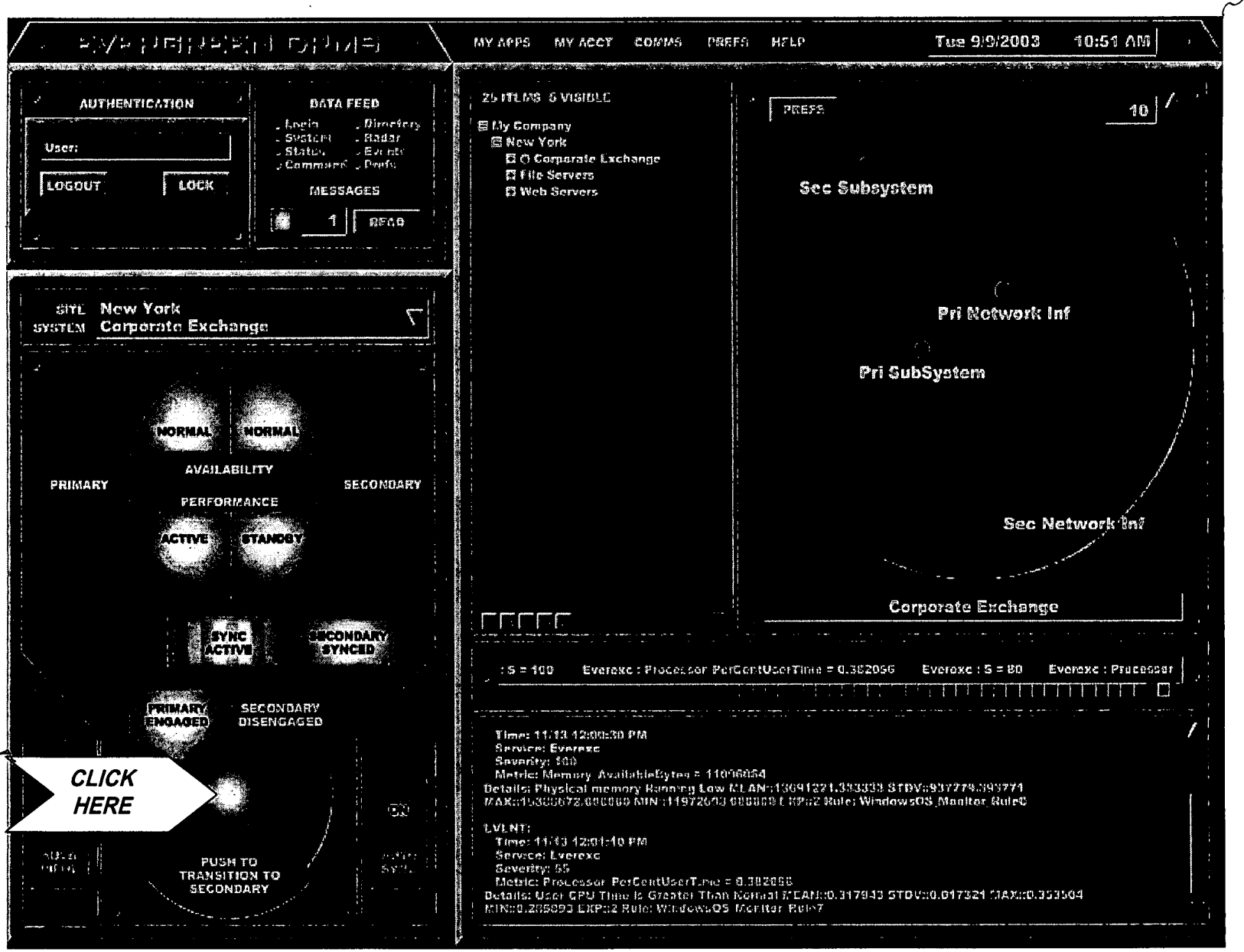

930
MY APPS
MY ACCT
COMMS
PREFS
HELP
Tue 9/9/2003
10:51 AM
AUTHENTICATION
User:
LOGOUT
LOCK
DATA FEED
MESSAGES
1
READ
25 ITEMS 5 VISIBLE
My Company
New York
Corporate Exchange
File Servers
Web Servers
PREFS
10
Sec Subsystem
Pri Network Inf
Pri SubSystem
Sec Network Inf
Corporate Exchange
SITE
SYSTEM
New York
Corporate Exchange
NORMAL
NORMAL
AVAILABILITY
PRIMARY
SECONDARY
PERFORMANCE
ACTIVE
STANDBY
SYNC ACTIVE
SECONDARY SYNCED
PRIMARY ENGAGED
SECONDARY DISENGAGED
932
CLICK HERE
PUSH TO TRANSITION TO SECONDARY
Time: 11/13 12:00:30 PM
Service: Everexc
Severity: 100
Metric: Memory AvailableBytes = 11006654
Details: Physical memory Running Low
EVENT:
Time: 11/13 12:01:10 PM
Service: Everexc
Severity: 55
Details: User CPU Time is Greater Than Normal

FIG. 9C

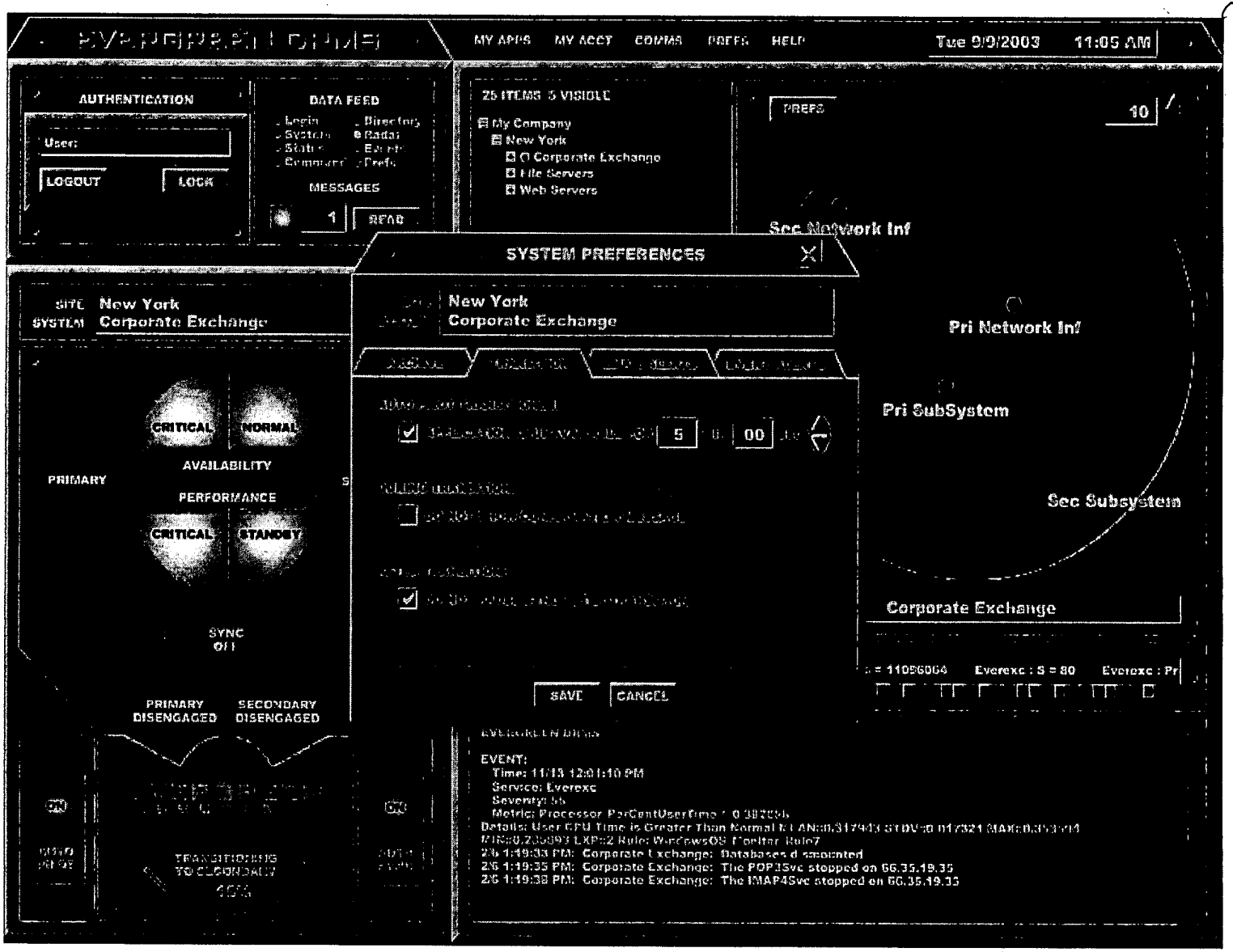

940
MY APPS
MY ACCT
COMMS
PREFS
HELP
Tue 9/9/2003
11:05 AM
AUTHENTICATION
User:
LOGOUT
LOCK
DATA FEED
MESSAGES
READ
25 ITEMS 5 VISIBLE
My Company
New York
Corporate Exchange
File Servers
Web Servers
PREFS
10
Sec Network Inf
SYSTEM PREFERENCES
SITE New York
SYSTEM Corporate Exchange
Pri Network Inf
Pri SubSystem
Sec Subsystem
CRITICAL
NORMAL
AVAILABILITY
PRIMARY
PERFORMANCE
CRITICAL
STANDBY
SYNC
OFF
PRIMARY DISENGAGED
SECONDARY DISENGAGED
SAVE
CANCEL
Corporate Exchange
EVENT:
Time: 11/13 12:01:10 PM
Service: Everexc
Severity: 55
2/6 1:19:33 PM: Corporate Exchange: Databases dismounted
2/6 1:19:35 PM: Corporate Exchange: The POP3Svc stopped on 66.35.19.35
2/6 1:19:38 PM: Corporate Exchange: The IMAP4Svc stopped on 66.35.19.35

FIG. 9D

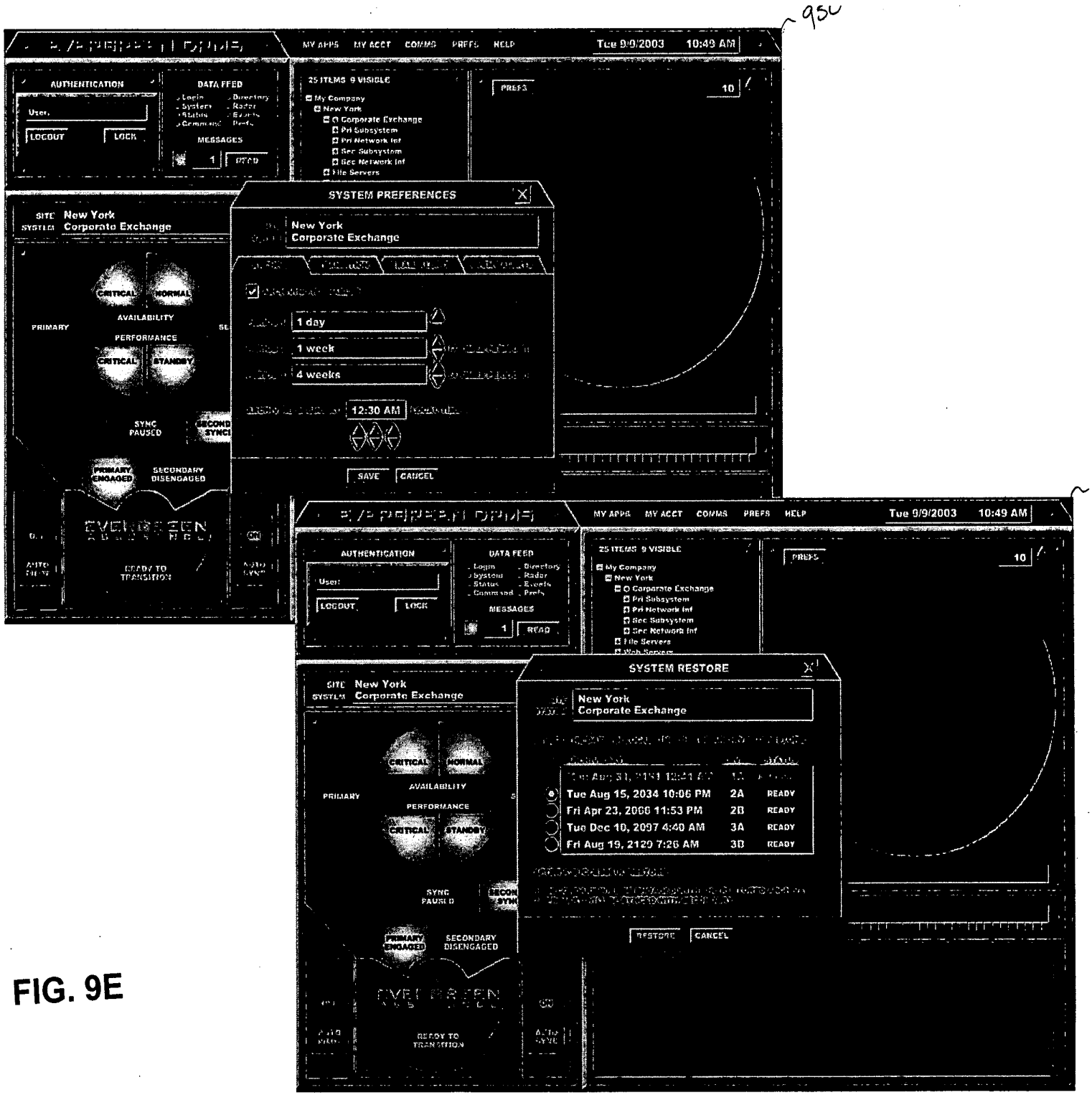

950
MY APPS
MY ACCT
COMMS
PREFS
HELP
Tue 9/9/2003
10:49 AM
AUTHENTICATION
DATA FEED
MESSAGES
SYSTEM PREFERENCES
New York
Corporate Exchange
1 day
1 week
4 weeks
12:30 AM
SAVE
CANCEL
CRITICAL
NORMAL
AVAILABILITY
PRIMARY
PERFORMANCE
STANDBY
SYNC PAUSED
PRIMARY ENGAGED
SECONDARY DISENGAGED
READY TO TRANSITION
952
SYSTEM RESTORE
Tue Aug 15, 2034 10:06 PM
Fri Apr 23, 2066 11:53 PM
Tue Dec 10, 2097 4:40 AM
Fri Aug 19, 2129 7:26 AM
READY
RESTORE
CANCEL

FIG. 9E

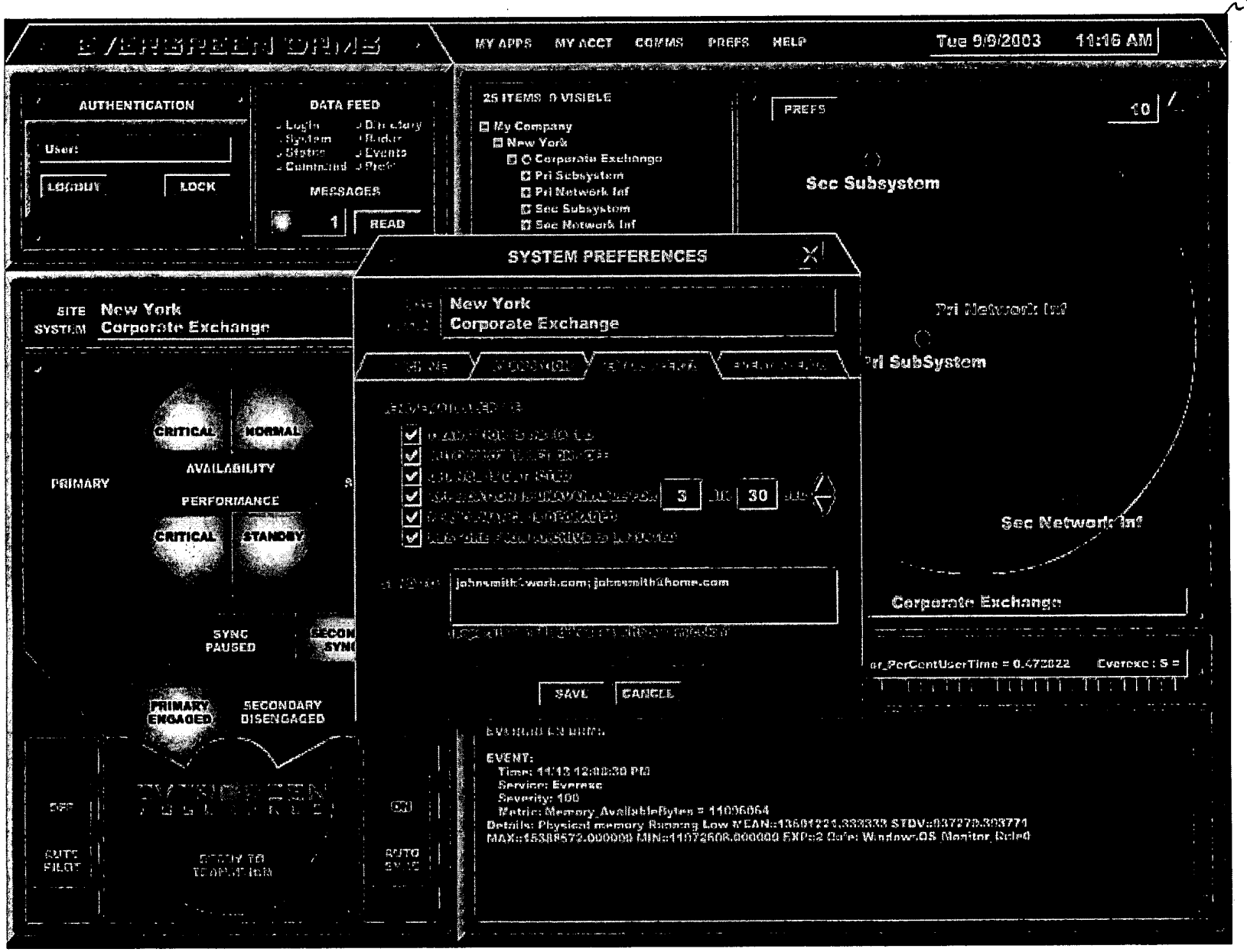

MY APPS
MY ACCT
COMMS
PREFS
HELP
Tue 9/9/2003
11:16 AM
AUTHENTICATION
User:
LOGOUT
LOCK
DATA FEED
MESSAGES
READ
25 ITEMS 0 VISIBLE
My Company
New York
Corporate Exchange
Pri Subsystem
Pri Network Inf
Sec Subsystem
Sec Network Inf
PREFS
10
Sec Subsystem
SYSTEM PREFERENCES
SITE New York
SYSTEM Corporate Exchange
CRITICAL
NORMAL
AVAILABILITY
PRIMARY
PERFORMANCE
CRITICAL
STANDBY
SYNC PAUSED
PRIMARY ENGAGED
SECONDARY DISENGAGED
3
30
SAVE
CANCEL
Pri Network Inf
Pri SubSystem
Sec Network Inf
Corporate Exchange
EVENT:
Severity: 100
Metric: Memory_AvailableBytes = 11096064

FIG. 9F